Oregon
Theodore R. Kulongoski, Governor

Department of Environmental Quality
Western Region Eugene Office
165 East 7th Avenue, Suite 100
Eugene, OR 97401
(541) 686-7838
FAX (541) 686-7551
OTRS 1-800-735-2900

October 14, 2009

Bob Humbert & Son, Inc.
1560-A S. Main Street
Milton-Freewater, OR 97682

RE: Septic Tank Approvals

Dear Mr. Humbert:

The Oregon Department of Environmental Quality (Department) has received the plans, specifications and other associated materials you provided for two additional septic tank configurations to be manufactured by your company located in Umatilla County at 1560-A S. Main Street, Milton-Freewater, Oregon. I am pleased to advise that the following tanks may be installed in Oregon based on your certification that these tanks comply with all applicable Department rules and regulations:

- 1500-Gallon - Two (2) Compartment Tank – Septic Tank
- 1500-Gallon - Two (2) Compartment Tank – Septic and Dosing Tank

These tank approvals are based on plans prepared by Malcolm W. Randall, PE Consulting Engineers of Milton-Freewater. These plans were approved by Department staff on October 12, 2009. Installation, operation and maintenance documents for the septic tank installation and appurtenant devices (vaults, pumps, splice boxes) that you submitted as part of the review were also approved.

You are authorized to manufacture and distribute these tanks for use in onsite wastewater treatment systems in Oregon until further notice, providing the following conditions are met:

1. Each tank must be manufactured in compliance with the Department's rules, and the plans and design specifications provided. Any deviation from the plans and specifications shall not be permitted unless authorized in writing by the Department.
2. The concrete mix shall be in accordance with the mix description on the plans prepared by your engineer. The minimum concrete strength of $fc = 4{,}000$ psi specified by your engineer shall be achieved. Three concrete sample cylinders shall be taken and tested for each tank manufactured until the minimum compressive strength is obtained. Thereafter, at least one concrete sample cylinder for each five tanks produced shall be taken. Samples shall be tested for compressive strength. Samples shall be alternately broken at 7 and 28 days. All samples shall be field cured where the tanks are stored. Laboratory curing of additional samples may be done at your option. All test results shall be made available for Department review upon request.

3. Each tank shall be cured and protected from premature drying and excessive hot or cold temperatures for the first ten days following casting. Tanks may be shipped from the casting yard after seven days, or earlier if the concrete has reached two-thirds of its design strength.
4. It is the responsibility of your business to insure that each assembled tank delivered to the construction site is water-tight. It is expected that your business will pre-test some percentage of the tanks at the plant to verify they are water-tight.
5. A fully assembled and complete tank shall be delivered to the purchaser, including the necessary tank risers and covers.
6. Each tank shall be delivered with the installation guide. The guide shall be printed on waterproof paper or an equivalent. You have indicated that you place these documents into a zip lock plastic bag when delivered with each tank.
7. Each tank is only acceptable for use at locations where the top loading will not exceed the engineering design parameters. Tanks proposed for use at other locations shall require an engineering analysis of the potential top loading, and may require the preparation of site-specific plans and specifications.
8. Each tank shall be marked on the uppermost tank surface over the outlet with the liquid capacity, date of manufacturer, burial depth limit, and either your full business name or the assigned number **1030**.

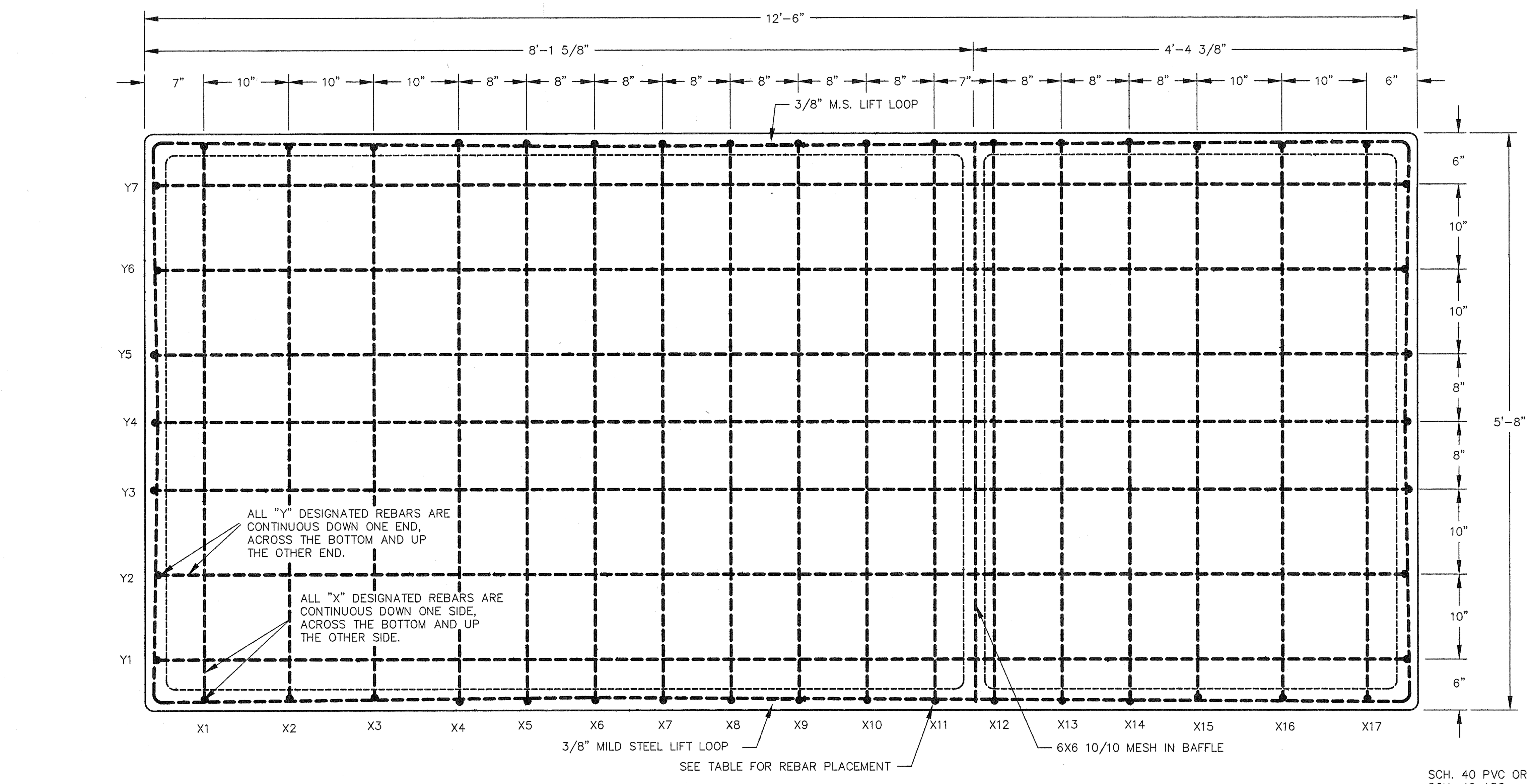
Please feel free to contact Robert Baggett at (541) 663-2036 or baggett.robert@deq.state.or.us if you have any questions about this letter.

Sincerely,

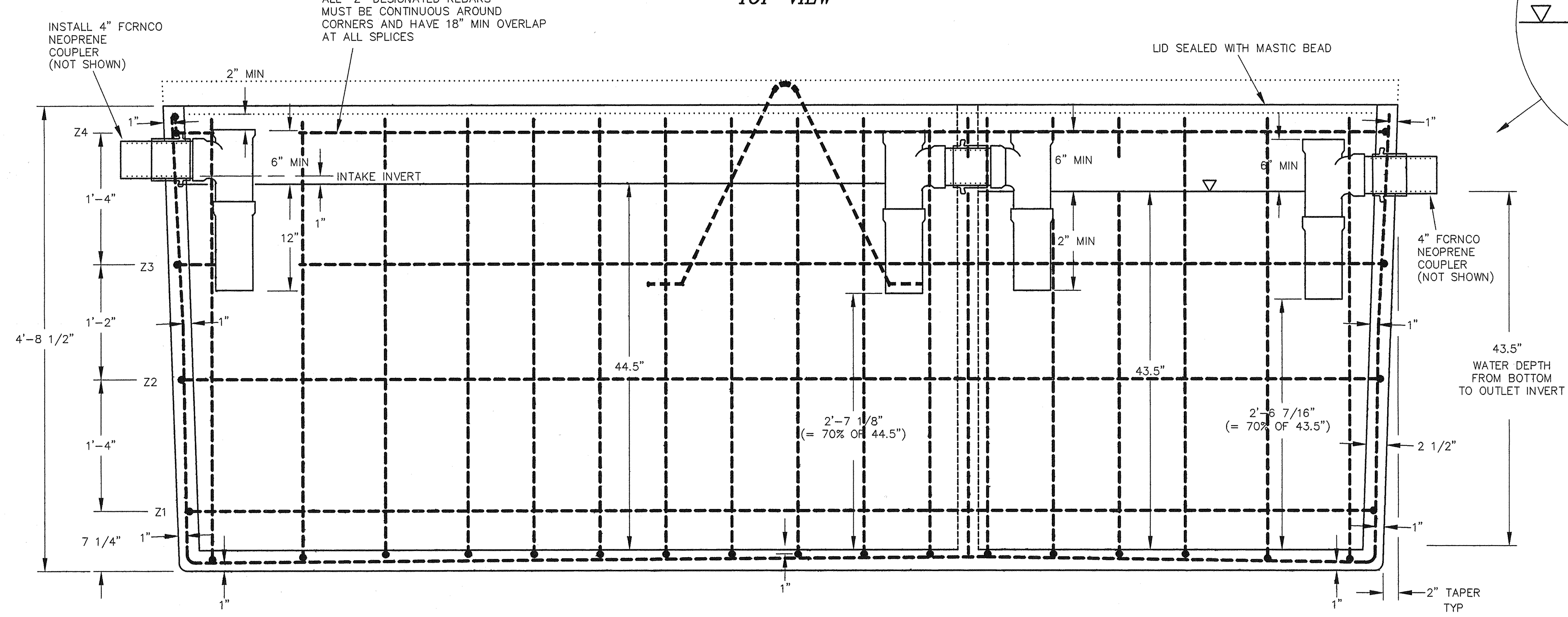
Michael E. Kucinski, Manager
Water Quality/Onsite

Encl.: Approved Plans, Diagram, and Installation Guide

EC: DEQ Direct Service Offices (w/Enclosures)
Contract County Offices (w/Enclosures)

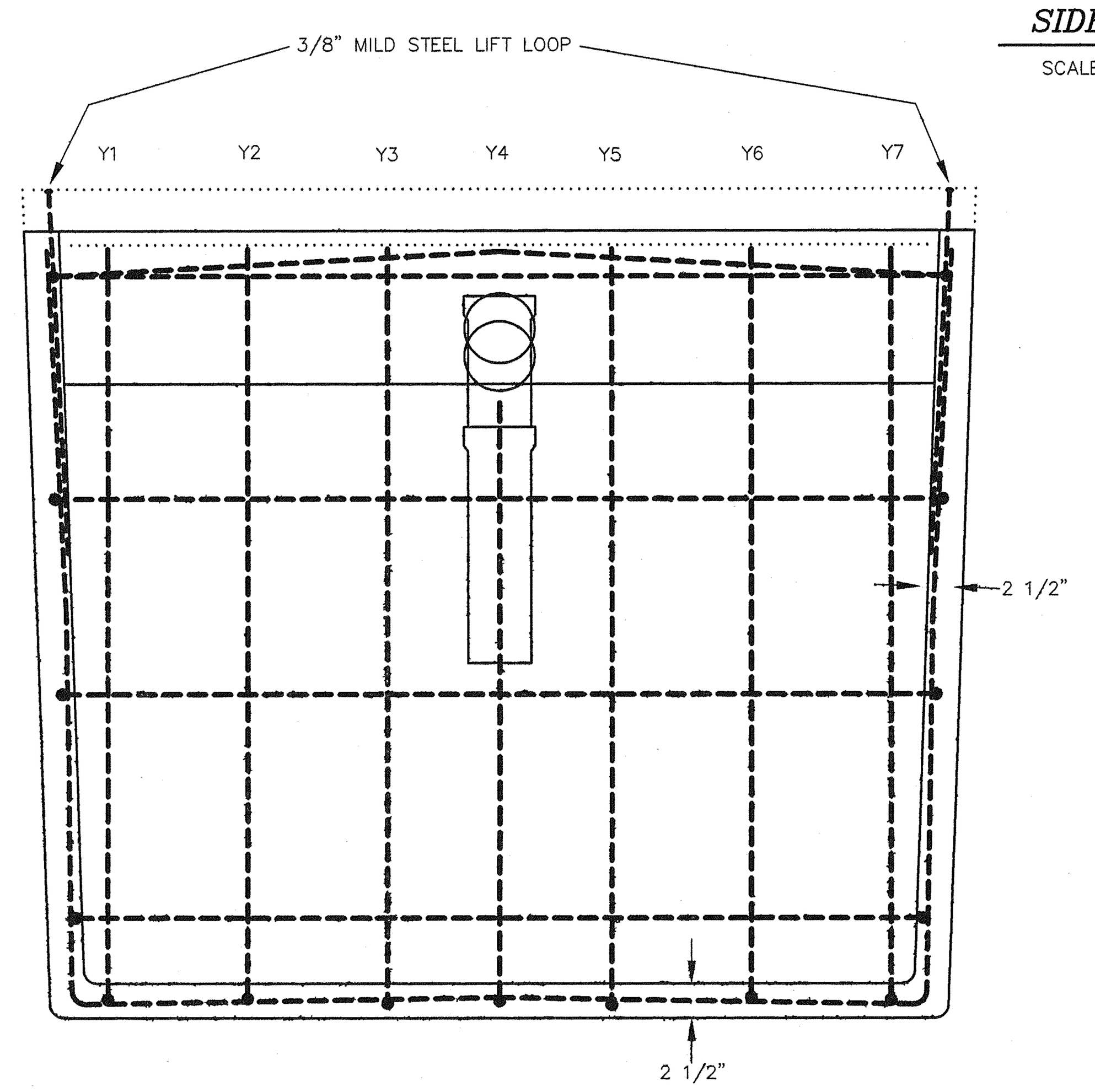


TOP VIEW



SIDE VIEW

SCALE: 1" = 1'



END VIEW

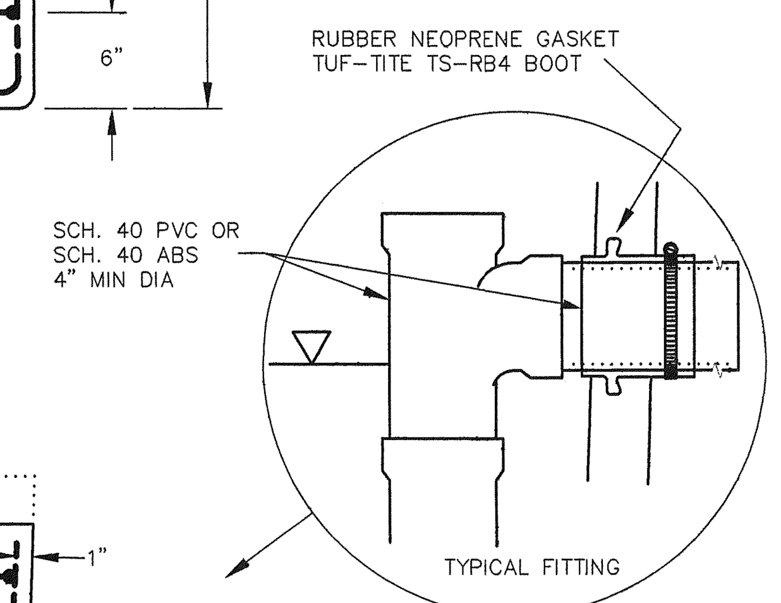
SCALE: 1" = 1'

VOLUME CALCULATIONS

TOTAL TANK VOLUME = 2009.22 GAL
LIQUID OPERATING VOLUME 1ST COMPARTMENT = 1076.66 GAL
LIQUID OPERATING VOLUME 2ND COMPARTMENT = 539.66 GAL
TOTAL OPERATING LIQUID VOLUME = 1616.33 GAL
SCUM VOLUME = 327 GAL = 18% (>10%) OF TOTAL TANK VOL: OK
1st COMPARTMENT LIQUID VOLUME INCREASES BY 24.19 GAL/INCH OF HEIGHT
2nd COMPARTMENT LIQUID VOLUME INCREASES BY 12.41 GAL/INCH OF HEIGHT

BUOYANCY CALCULATIONS

TOTAL DISPLACEMENT WATER EQUIVALENT = 22,100 LBS
WEIGHT OF TANK AND LID = 12,317.67 LBS
NET UPLIFT FORCE WHEN SUBMERGED = 9,782.33 LBS
DRY SOIL DEPTH ON LID TO PREVENT FLOTATION = 16.6", USE 18" TO BE SAFE.
SATURATED SOIL DEPTH ON LID TO PREVENT FLOTATION = 26.9", USE 30" TO BE SAFE.



BEDDING PROCEDURE

ROUGH EXCAVATE 1 FOOT BELOW THE INTENDED BASE OF THE TANK, AND 2 FEET WIDER THAN ITS BASE DIMENSIONS ON ALL SIDES. LAY BACK SIDE WALLS AT 1.5:1 OR SHALLOWER AS REQUIRED TO PREVENT CAVE-IN. BED THE TANK WITH 1 FOOT OF SELECT NATIVE BACKFILL, SAND OR 3/8" MINUS GRAVEL. LEVEL THE TANK. BACKFILL AGAINST THE TANK USING SELECT NATIVE MATERIAL (NO ROCKS OVER 1"), FOR A MINIMUM OF 6" AWAY FROM THE TANK. AT GREATER DISTANCES USE NATIVE EXCAVATION MATERIAL. DO NOT COMPACT EXCEPT FOR LIMITED AREAS UNDER INLET AND OUTLET PIPES. IF SANDBAGS ARE USED TO PREVENT FLOTATION, THE BACKFILL ON TOP OF THE LID MAY BE ADDED AS THE SANDBAGS ARE REMOVED. BRING FINISH GRADE TO MATCH SURROUNDING GRADE.

WATERTIGHTNESS TESTING PROCEDURE

STOP INLEST AND OUTLET WITH INFLATABLE STOPPERS. FILL THE TANK TO A POINT AT LEAST 2" ABOVE THE RISER CONNECTION TO THE LID. THERE MUST BE NO MORE THAN 1-GALLON LEAKAGE PER 24 HOURS. MARK WATER LEVEL AT START OF TEST. AT END OF 24 HOURS, ADD 1 GALLON OF WATER (IF POSSIBLE). IF WATER LEVEL IS HIGHER THAN INITIAL MARK, THE TANK PASSES, OTHERWISE REMEDIAL MEASURES MUST BE TAKEN, AND THE TEST REPEATED.

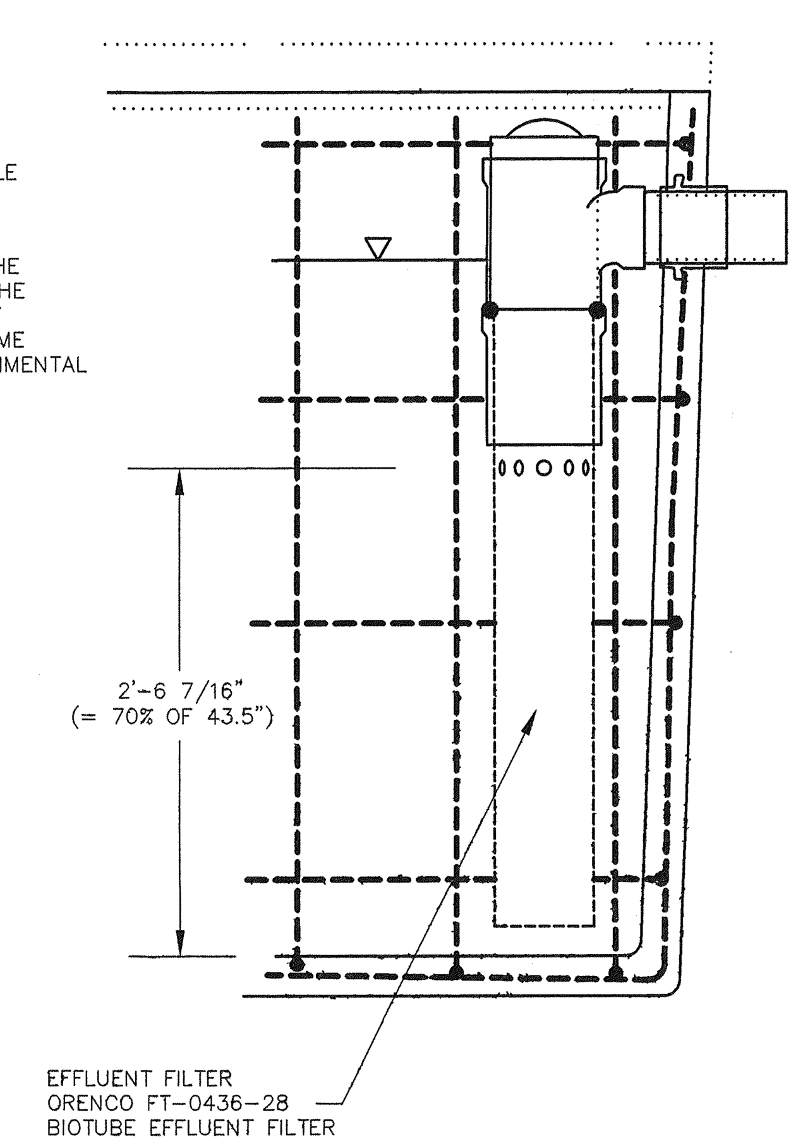
NOTE:
THIS TANK DESIGN SHALL NOT BE INSTALLED WITH GREATER THAN 3 FT OF SOIL COVER OVER THE LID. THE WATER TABLE SHALL NOT BE HIGHER THAN THE LID ELEVATION.

NOTE:
ALL PREFABRICATED SEPTIC TANKS SHALL BE MARKED ON THE UPPERMOST TANK SURFACE WITH THE LIQUID CAPACITY OF THE TANK, THE DATE OF MANUFACTURE, THE BURIAL DEPTH LIMIT OF 3' AND EITHER THE MANUFACTURER'S FULL BUSINESS NAME OR THE NUMBER ASSIGNED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY.

CONCRETE SPECIFICATIONS

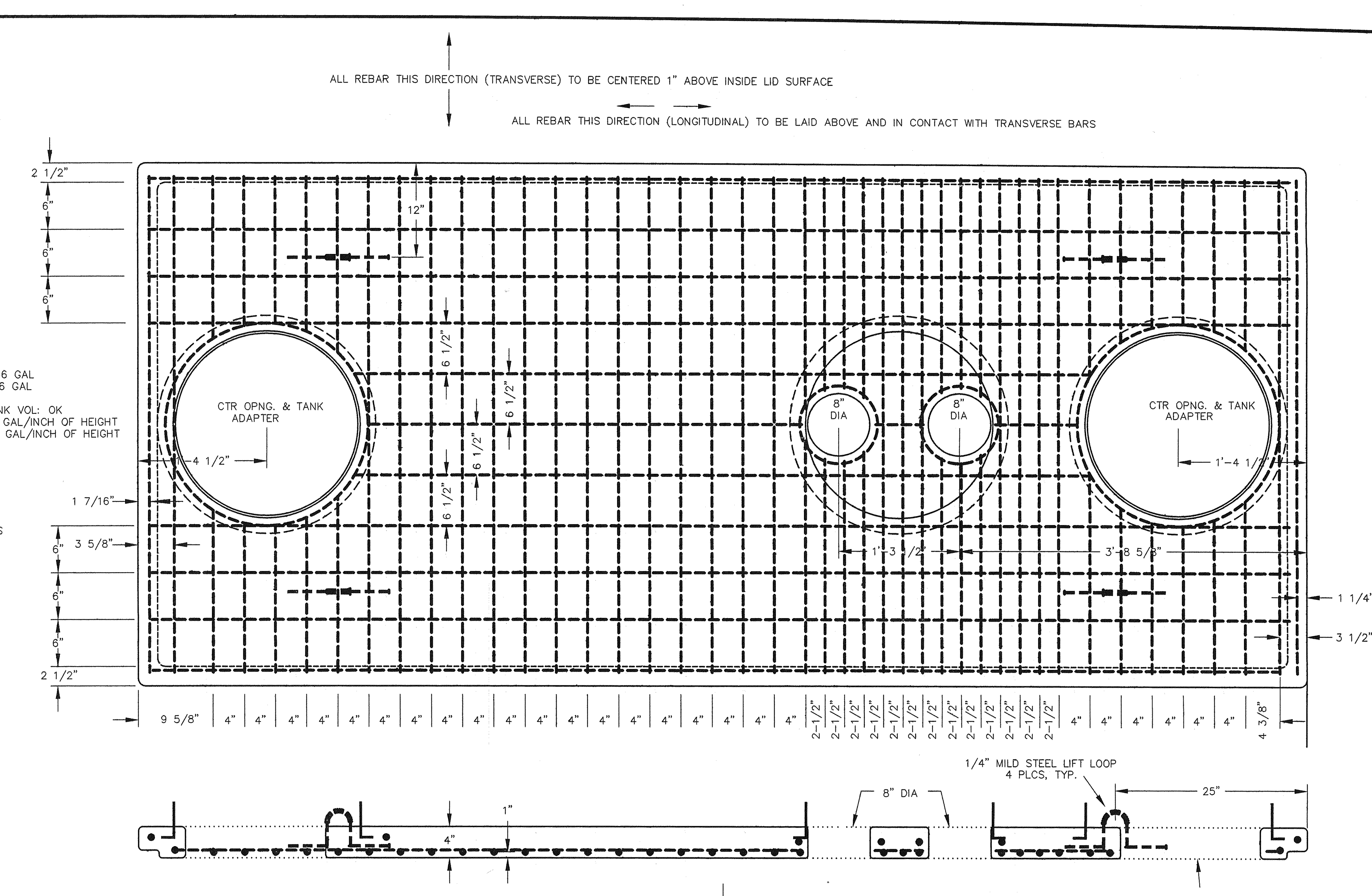
COMPONENETS BY VOLUME	
FINE AGGREGATES	43%
COARSE AGGREGATES, 3/8" MAX	25%
CEMENT, TYPE I	12%
WATER, LESS THAN 6.5 GAL/SACK	20%

SLUMP NOT TO EXCEED 4" WHEN VIBRATION IS USED
RECOMMENDED TANK CURING TEMPERATURE 55°F, 28 DAYS, 70°F THEREAFTER
CURING RELATIVE HUMIDITY TO BE 80% OR HIGHER FOR MINIMUM OF 28 DAYS
DESIGN CONCRETE STRENGTH TO BE 3000 PSI MIN. AT 28 DAYS
COMPRESSION TEST CYLINDERS TO BE BROKEN AT 28 DAYS



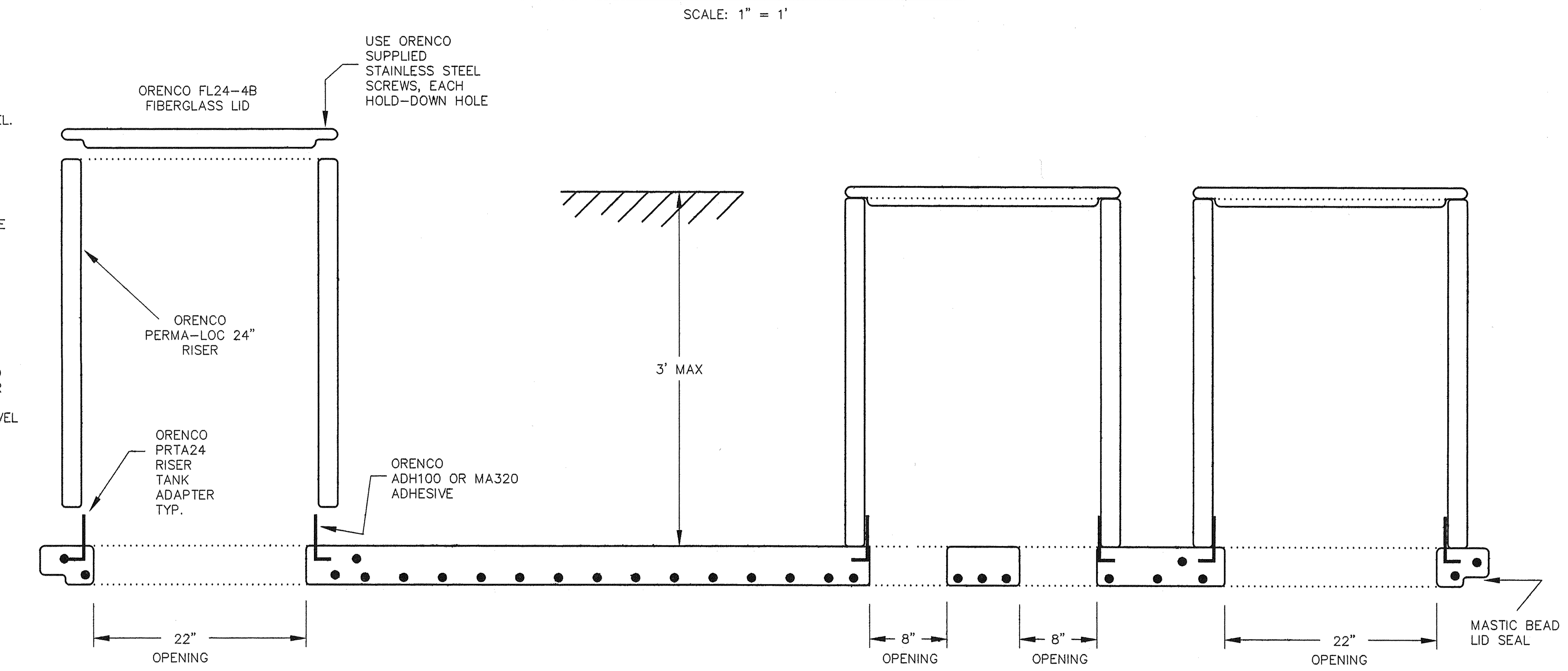
EFFLUENT FILTER DTL

SCALE: 1" = 1'



UP TO 2,500 LBS WHEEL LOADED LID, TOP & EDGE VIEW

SCALE: 1" = 1'



RISER DETAILS

SCALE: 1" = 1'

NOTE:
ALL REBAR IS #3 GRADE 60 UNLESS OTHERWISE NOTED
NO WELDING IS PERMITTED ON REBAR, JOIN WITH TWISTED M.S. WIRE
ALL CONCRETE IS TO BE 3000 PSI 28 DAYS, MIN
ALL CONCRETE SURFACES TO BE TREATED WITH MOISTURE SEALANT AFTER CURING

REBAR INTERSECTION PLACEMENT TABLE

DASH "–" INDICATES ALL BAR NUMBERS IN THAT LETTER SERIES

BOTTOM OF TANK	SIDES OF TANK	ENDS OF TANK
X– BELOW Y1	X– OUTSIDE Z1	Y– OUTISDE Z1
X– BELOW Y2	X– INSIDE Z2	Y– INSIDE Z2
X– ABOVE Y3	X– INSIDE Z3	Y– INSIDE Z3
X– ABOVE Y4	X– OUTSIDE Z4	Y– OUTSIDE Z4
X– ABOVE Y5		
X– BELOW Y6		
X– BELOW Y7		

CERTIFICATION:

THE MANUFACTURER OF THIS 1500 GALLON SEPTIC TANK, NUMBER............ BOB HUMBERT & SON, INC., 1560 1/2 SOUTH MAIN, MILTON-FREEWATER, OR 97862 PHONE (541) 938-3488, CERTIFIES THAT THIS SEPTIC TANK, TO BE USED FOR ON-SITE SEWAGE DISPOSAL SYSTEMS, DOES COMPLY WITH ALL REQUIREMENTS OF OAR 340-73-025.

BY:.. BY:..

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 10062 OREGON JAN 23, 2001 MALCOLM W. RANDALL

EXPIRES: 12-31-2008
Replotted from archive 11-10-09

APPROVED
By Randy Trox at 3:57 pm, Nov 20, 2009

MALCOLM W. RANDALL, P.E.
CONSULTING ENGINEERING
P.O. BOX 218, MILTON-FREEWATER, OR 97862
PHONE: (541) 566-2405 FAX: (541) 566-3332

1500 GAL. 2-COMP. SEPTIC
BOB HUMBERT & SON, INC.
1560 1/2 SOUTH MAIN
MILTON-FREEWATER

1/1

ENGINEERING RELEASE DATE **JANUARY 28, 2004, REV. 3-15-05, 6-3-08, 10-08-08**

1-5DSEPT.DWG SCALE 1=12

BOB HUMBERT & SON INC.
1500 GALLON, 2-COMPARTMENT SEPTIC TANK
INSTALLATION MANUAL

Revised October 8, 2008

EXCAVATION

This tank shall not have more than 3 feet of soil cover above the top of the lid. The rough excavation shall have its bottom 1 foot below the intended base of the tank, and 2 feet wider than the base dimensions of the tank on all sides, to allow working access. The sides of the excavation must be laid back at a minimum slope of 1.5 horizontal to 1 vertical for safety against cave-in. If the soil characteristics demand, a flatter lay-back may be required.

After rough excavation is complete, including trenches for inlet and outlet pipes, bed all pipes with a minimum of 6 inches of select native backfill, sand or 3/8" minus gravel. Bed the tank with 1 foot of select native backfill, sand or 3/8" minus gravel. Level the tank bedding accurately.

INSTALLATION

Lower the tank into the excavation using the lift eyes which are pre-cast into the edges of the tank. Use a spreader bar in the lift sling to prevent damage to the sidewalls of the tank. Position the tank in alignment with the inlet and outlet pipes, and make connections. If the water table is higher than the base of the tank, temporary pumping of the ground water may be required to prevent tank flotation.

After pipe connections are made and any internal filtration equipment required, install the lid and risers using mastic bead waterproof connection as shown on the plans. If the water table is higher than half the depth of the tank, anti-flotation measures must be taken to prevent tank movement until the excavation is fully backfilled.

Backfill against the tank using select native (no rocks over 1") material for a minimum distance of 6" away from the tank. At distances greater than 6" from the tank, native excavation material may be used for backfill. Deposit backfill WITHOUT compacting except for limited areas under the inlet and outlet pipes. If sandbags are used to prevent flotation, the backfill on top of the lid may be added as the sandbags are removed. Bring finish grade to match surrounding grade.

WATERTIGHTNESS

After installation, each tank shall be water tested by stopping the inlet and the outlet with inflatable stoppers, and filling the tank to a point at least 2" above the riser connection to the lid. During the test there shall be no more than 1-gallon leakage over a 24-hour period. This shall be ascertained by measuring the water level from a known point on the riser at the start of the test. At the end of the 24-hour period, one gallon of make-up water is to be added to the contents of the tank. If the water level rises to or above that measured at the start of the test, the tank has passed the test. If the water level does not rise above that measured at the start of the test, the tank fails the test, and remedial measures must be taken.

PIPING

The gravity flow inlet and outlet pipes shall be 4" ABS, connected to the tank using a 4" FCRNCO Neoprene coupler as specified on the drawing.

ADHESIVE

Use ADH 100 or MA 320 adhesive sealant to seal the risers to the tank adapter.